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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/544,253	08/02/2005	Yoshiaki Ohbayashi	0388-051646	1352

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EXAMINER

LE, HUYEN D

ART UNIT	PAPER NUMBER
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2615

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/544,253

Applicant(s)

OHBAYASHI ET AL.

Examiner

HUYEN D. LE

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>10/2/06&7/5/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: the term "SOF" needs to be described in the specification.

Appropriate correction is required.

Claim Objections

2. Claims 13, 14 and 16-17 are objected to because of the following: the term single crystal silicon on insulator needs to be inserted before "SOF". Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 2615

4. Claims 10-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernstein (U.S. patent 5,452,268).

Regarding claim 10, Bernstein'268 teaches an acoustic transducer that comprises a back electrode (12) forming perforations (13) therein corresponding to acoustic holes and a diaphragm (16). As shown in figure 1, the diaphragm (16) is mounted on a substrate (the silicon substrate 18) while the back electrode (12) is mounted in a position opposed to the diaphragm across a void as claimed. The back electrode (12) is formed by polycrystal silicon (col. 2, lines 57-62, col. 3, lines 25-30).

Bernstein does not specifically teach a thickness as claimed. However, Bernstein does not limit to any thickness for the back electrode.

Therefore, it would have been obvious to one skilled in the art to provide any thickness for the back electrode (12) of Bernstein such as the thickness of 5 microns to 20 microns depending on the applications and the desired frequency characteristics.

Regarding claim 11, Bernstein does not specifically teach that the substrate (18) is a monocrystal silicon substrate. However, it is known in the art to provide monocrystal silicon for the substrate in the capacitive acoustic transducers.

Therefore, it would have been obvious to one skilled in the art to provide monocrystal silicon for the substrate (18) for an alternate choice.

Regarding claim 12, Bernstein teaches an impurity diffusion treatment that is executed on the diaphragm (col. 4, lines 42-48).

Regarding claims 13-15, Bernstein teaches the substrate (18) that comprises a support substrate having a silicon substrate and consisting of the single crystal silicon on insulator (SOI)

Art Unit: 2615

wafer as claimed (figure 1). The SOI wafer has an active layer used as a diaphragm (16) of monocrystal silicon (col. 2, lines 57-62, col. 3, lines 25-30).

Bernstein does not specifically teach a thickness as claimed in claim 15. However, Bernstein does not limit to any thickness for the diaphragm.

Therefore, it would have been obvious to one skilled in the art to provide any thickness for the diaphragm (16) of Bernstein such as the thickness of 0.5 to 5 microns depending on the applications and the desired frequency characteristics.

Regarding claims 16-17, Bernstein shows the SOI structure that includes a silicon oxide film (14, col. 3, lines 63-64) formed on a monocrystal silicon substrate (18), and a polycrystal silicon film (16, col. 3, lines 25-30 and col. 5, lines 1-7) formed on the silicon oxide film (14).

Regarding claims 18, Bernstein teaches the diaphragm (16) that is formed of polycrystal silicon (col. 2, lines 57-62, col. 3, lines 25-30 and col. 5, lines 1-7).

Bernstein does not specifically teach a thickness as claimed in claim 18. However, Bernstein does not limit to any thickness for the diaphragm.

Therefore, it would have been obvious to one skilled in the art to provide any thickness for the diaphragm (16) of Bernstein such as the thickness of 0.5 to 5 microns depending on the applications and the desired frequency characteristics.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2615

Bernstein (U.S. patent 5,146,435) teaches a construction of a capacitor acoustic transducer.

Ling (U.S. patent 5,208,789) teaches a construction of a condenser microphone.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUYEN D. LE whose telephone number is (571) 272-7502. The examiner can normally be reached on 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, SINH TRAN can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



HL
March 27, 2007



HUYEN LE
PRIMARY EXAMINER